

CLAIMS

- 1 A birnavirus mutant which is not able to produce a native VP5 protein as a result of a mutation in the VP5 gene of the birnavirus genome.
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- 2 A birnavirus mutant according to claim 1, characterised in that the mutation is a substitution.
- 3 A birnavirus mutant according to claim 1, characterised in that the mutation is an
10 insertion of a heterologous nucleic acid sequence.
- 4 A birnavirus mutant according to claim 3, characterised in that the heterologous nucleic acid sequence encodes a polypeptide and the heterologous nucleic acid sequence is under the control of an expression control sequence regulating the
15 expression of the sequence in a cell infected with the virus mutant.
- 5 A birnavirus mutant according to claims 1-4, characterised in that the birnavirus is infectious bursal disease virus (IBDV).
- 6 A birnavirus mutant according to claim 5, characterised in that the mutation is in the
20 genome of a virulent field virus.
- 7 A birnavirus mutant according to claim 5, characterised in that the mutation is in the genome of vaccine strain, preferably in vaccine strain D78.
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- 8 A birnavirus mutant according to claims 5-7, characterised in that the mutant has a mutated start codon and three stop codons in the 5'-end of the VP5 gene as shown in SEQ ID No: 7.
- 9 A birnavirus according to claims 5-8, characterised in that the IBDV expresses a
30 chimeric VP2 protein comprising virus neutralising epitopes of different antigenic IBDV types.

10 A vaccine against a birnavirus infection in animals, characterised in that it comprises a birnavirus mutant according to claims 1-9 and a pharmaceutically acceptable carrier.

5 11 A method for determining birnavirus infection in an animal, characterised in that a sample of the animal is examined for the presence of anti-VP5 antibodies.

12 A method according to claim 11, characterised in that the method comprises the steps of:

- 10 (i) incubating a sample suspected of containing anti-birnavirus antibodies, with VP5 antigen,
- (ii) allowing the formation of antibody-antigen complex , and
- (ii) detecting the presence of the antibody-antigen complex.

15 13 A diagnostic test kit suitable for carrying out a method according to claims 11-12.

14 Use of the lack of the expression of native VP5 protein by a birnavirus mutant as a marker to distinguish vaccinated animals from animals infected with naturally-occurring birnavirus.